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32605 7590 05/22/2008 MACPHERSON KWOK CHEN & HEID LLP 2033 GATEWAY PLACE SUITE 400 SAN JOSE, CA 95110			EXAMINER BODDIE, WILLIAM	
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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/758,543
Filing Date: January 16, 2004
Appellant(s): KIM ET AL.

MAILED

MAY 22 2008

Technology Center 2600

Don C. Lawrence
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed January 31st, 2008 appealing from the Office action mailed May 9th, 2007.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

6,801,178	Nitta et al.	10-2004
6,847,377	Kitahara et al.	01-2005

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 102

1. Claims 1, 3, 5-6 and 9-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Nitta et al. (US 6,801,178).

With respect to claim 1, Nitta discloses, an apparatus for driving a liquid crystal display (col. 1, lines 8-10) including a plurality of pixels arranged in a matrix (clear from fig. 2), the apparatus comprising:

a signal controller (1 in fig. 1, 19) supplying image data to a data driver (26-28, 29-1 – 29-8 in fig. 1; clear from fig. 1) and generating digital gray data based on a distribution of grays of the image data for one frame (col. 10, lines 3-27; col. 10, lines 33-68; also see fig. 18); and

a digital/analog converter (11-15 in fig. 1; col. 4, lines 36-38) converting the digital gray data (5 in fig. 1) from the signal controller (1 in fig. 1) into analog voltages (VG0-VG255 in fig. 6) and supplying the analog voltages (16 in fig. 1) to the data driver as the gray voltages,

the data driver (26-28, 29-1 – 29-8 in fig. 1) selecting data voltages corresponding to the image data representing at least one gray from the gray voltages (VG0-VG255 in fig. 6) and applying the data voltages to the pixels (col. 5, lines 60-63).

With respect to claim 3, Nitta discloses, the apparatus of claim 1 (see above), wherein each image data has a luminance data having a value (0-255 for example in fig. 18), which is determined by the at least a gray represented by the image data and belong to one of a plurality of value sections (0-31, 32-63 for example in fig. 18), and the gray distribution is associated with the number of the image data belong to respective value sections (clear from fig. 18; also see col. 10, lines 18-32).

With respect to claim 5, Nitta discloses, the apparatus of claim 3 (see above), wherein the signal controller comprises a gray voltage generator reading out the image data for one frame (col. 8, lines 54-57; display data in fig. 19; 302 in fig. 19), calculating the gray distribution of the image data (303 in fig. 19), and modifying a standard gray voltage curve to obtain the digital gray data (304 in fig. 19).

With respect to claim 6, Nitta discloses, the apparatus of claim 5 (see above), wherein the gray voltage generator calculates the luminance data of the image data for one frame (col. 8, lines 54-57), calculates the number of the image data included in the value sections to obtain the gray distribution of the image data (302-303 in fig. 19; also see col. 10, lines 33-53).

With respect to claim 9, Nitta discloses, a method for driving a liquid crystal display (col. 1, lines 8-10), the method comprising:

reading out image data representing at least a gray for one frame (col. 8, lines 54-57);

calculating gray distribution of the read image data (fig. 18; also see 302-303 in fig. 19); and

modifying a standard gray voltage curve based on the calculated gray distribution to generate digital gray data (fig. 18; col. 10, lines 3-24),

converting the digital gray data into analog voltages (figs. 5-6, for example, col. 8, lines 4-9), and

supplying the analog voltages (16 in fig. 1) to a data driver (26-28, 29-1 – 29-8 in fig. 1) as gray voltages.

With respect to claim 10, Nitta discloses, the method of claim 9 (see above), wherein the gray distribution calculation comprises:

calculating luminance data of the image data based on the at least a gray represented by the image data (note the x axis of the histogram in fig. 18, "brightness distribution," clearly Nitta is calculating luminance data; also see col. 10, lines 25-32); and

counting the number of the image data included in a plurality of sections of the luminance data (clear from fig. 18; also see specifically, col. 10, lines 18-24).

Claim Rejections - 35 USC § 103

2. Claims 4 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nitta et al. (US 6,801,178) in view of Kitahara et al. (US 6,847,377).

With respect to claim 4, Nitta discloses, the apparatus of claim 3 (see above), wherein each image data includes a set of image data portions for a predetermined number of respective colors (red, green and blue; fig. 10 for example).

Nitta does not expressly disclose, that the luminance data is an average of the grays of each color.

Kitahara discloses, an apparatus wherein each image data includes a set of image data portions for a predetermined number of respective colors (red, green and blue), and a luminance data of the image data is defined as an average of grays represented by the set of the image data portions forming in the image data (fig. 9; also note col. 14, lines 40-58 which further discloses the process of averaging the gray level of each subpixel together).

Kitahara and Nitta are analogous art because they are both from the same field of endeavor namely, grayscale conversion.

At the time of the invention it would have been obvious to one of ordinary skill in the art to average the subpixel gray scale values, as taught by Kitahara, to generate the luminance data of Nitta.

The motivation for doing so would have been to compensate for any offset between color depth and luminance, as well as calculate an accurate luminance value (Kitahara; col. 3, lines 25-26).

Therefore it would have been obvious to combine Kitahara with Nitta for the benefit of compensate offset between color depth and luminance to obtain the invention as specified in claim 4.

With respect to claim 13, Nitta discloses, the method of claim 10 (see above), wherein each image data includes a set of image data portions for a predetermined number of respective colors (red, green and blue; fig. 10 for example).

Nitta does not expressly disclose, that the luminance data is an average of the grays of each color.

Kitahara discloses, an apparatus wherein each image data includes a set of image data portions for a predetermined number of respective colors (red, green and blue), and a luminance data of the image data is defined as an average of grays represented by the set of the image data portions forming in the image data (fig. 9; also note col. 14, lines 40-58 which further discloses the process of averaging the gray level of each subpixel together).

Kitahara and Nitta are analogous art because they are both from the same field of endeavor namely, grayscale conversion.

At the time of the invention it would have been obvious to one of ordinary skill in the art to average the subpixel gray scale values, as taught by Kitahara, to generate the luminance data of Nitta.

The motivation for doing so would have been to compensate for any offset between color depth and luminance, as well as calculate an accurate luminance value (Kitahara; col. 3, lines 25-26).

Therefore it would have been obvious to combine Kitahara with Nitta for the benefit of compensate offset between color depth and luminance to obtain the invention as specified in claim 13.

(10) Response to Argument

The basic argument put forth by Applicants' can be boiled down a belief that Nitta does not disclose "a digital/analog converter converting the digital gray data from the signal controller into analog voltages and supplying the analog voltages to the data driver as the gray voltages" as stated in independent claim 1 or "converting the digital

gray data into analog voltages, and supplying the analog voltages to a data driver as gray voltages" as stated in independent claim 9.

Applicants first argue that Nitta is merely a voltage selector, and not a D/A converter. The Examiner respectfully disagrees. Nitta's gray scale voltage generator does in part function as a voltage divider. There, however, is more functionality imparted in elements 11-15 in figure 1 of Nitta than mere simple voltage division. Digital data signals are supplied to the elements (DATA and CL1 in fig. 1), and based on these inputs a specific set of analog gray scale voltages are selected to be output. This would seem to the Examiner to satisfy the claim limitations the Applicants have presented regarding a digital/analog converter. In short, variable digital data is input and in return analog grayscale voltages specific to the digital data are output.

In response to the Examiner's previous contentions that Nitta does disclose a D/A converter to the extent required by the claims the Applicants restate a previous argument labeling the input digital data of Nitta as control signals. Specifically, the Applicants place a large emphasis on Nitta's own description of the input, 14 in figure 6, as "correspondence relationships between liquid crystal display data, DATA, and the liquid crystal gray scale voltages" (Nitta; col. 4, lines 36-38). Applicants see this as sufficient evident that the voltage generating circuit is a voltage divider and not a D/A converter.

As the Examiner has stated previously, Nitta explains that the input data contains the correspondence relationships between the liquid crystal display data and the liquid crystal gray scale voltage (col. 4, lines 36-38). Thus the set data is clearly more than

just simple control data. This description of Nitta's set data seems to very easily fit into the broadest reasonable interpretation of "digital gray data." Furthermore, Nitta's description of "set data" seems to be inline with the Applicants' own definition of digital gray data, which in paragraph 75 states that "[t]he gray voltage generator 610 serially supplies the digital gray data corresponding to the calculated target gray voltages." Therefore the Applicants own specification defines digital gray data as exhibiting a correspondence relationship with the target gray voltages just as Nitta as described.

In short, the input data of Nitta more than fulfills all the currently claimed limitations regarding "digital gray data" and is therefore seen as an equivalent.

In conclusion, it is the claim limitations that must be met. Independent claim 1 requires a "digital/analog converter converting the digital gray data into analog voltages, and supplying the analog voltages to a data driver as gray voltages." When comparing the functionality of Applicants D/A converter as described in paragraph 75 of the specification with the manner of operation of Nitta it is evident to the Examiner that Nitta satisfies at least the limitations of independent claim 1.

Independent claim 9 appears to be even more broadly claimed as it does not even recite a D/A converter, instead only requiring that the digital gray data be converted into analog voltages. Nitta certainly meets this very basic and broad limitation by taking in digital gray data and converting that data to output analog voltages to be supplied to a data drive as gray voltages.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

(12) Conclusion

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

William L. Boddie



Conferees:



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